



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/689,189

10/20/2003

Ronald N. Miles

SUNY RB-136

2695

90150

7590

12/08/2009

Hoffberg & Associates  
10 Bank Street  
Suite 460  
White Plains, NY 10606

EXAMINER

LE, HUYEN D

ART UNIT

PAPER NUMBER

2614

MAIL DATE

DELIVERY MODE

12/08/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/689,189	<b>Applicant(s)</b> MILES ET AL.	
	<b>Examiner</b> HUYEN D. LE	<b>Art Unit</b> 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-18 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10,19,20 and 22-28 is/are rejected.
- 7) ☒ Claim(s) 3 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 2 is objected to because of the following inconsistency: on line 3, "structure" should be changed to --member--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. Claim 22 recites the limitation "said rigid plate-shaped member" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 23 recites the limitation "said rigid plate-shaped member" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 24 recites the limitation "said rigid plate-shaped member" in line 2. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Loeppert et al. (US 5,870,482).

Regarding claim 1, Loeppert'482 teaches an acoustic diaphragm having a dynamic response extending through the audible range, and comprising a rigid plate-shaped member (12,

Art Unit: 2614

16, figures 1, 1a). Loeppert'482 teaches a stiffened edge (12a, 60) of a side of the rigid plate-shaped member which pivots on torsional springs (figures 1, 1a, 13 and see col. 3, lines 45-48).

The rigid plate shaped member has torsional and translational stiffeners (32, 62, 62a, 68) as claimed (figure 1a, 13, 13a, 13c, 13d, 17a, 17b, col. 5, lines 1-31, col. 7, lines 49-55, col. 8, lines 39-43 and col. 10, lines 15-26) as claimed. Since the diaphragm (12) is anchored to a support structure (11) at a fixed edge (12a) and free on the other three edges, the diaphragm (12) is pivotally mounted to the support structure (11) at the fixed edge or stiff edge (12a), wherein the stiff edge (12a) of the diaphragm (12) is supported on torsional springs (also see col. 5, lines 1-21).

Regarding claim 2, Loeppert'482 teaches the torsional and translational stiffeners comprising cross members (32) traversing the rigid plate-shaped member (12).

Regarding claims 5 and 6, Loeppert'482 et al. shows the rigid plate-shaped member (12, 16) that comprises a substantially flat shape or a shape substantially corresponding to a box as claimed (figures 1, 1a, 13, 17).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

Art Unit: 2614

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 7-10, 19, 20 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loeppert et al. (US 5,870,482).

Regarding claims 7, 8, 25 and 26, Loeppert'482 does not specifically disclose the thickness of the rigid member and the dimensions of the torsional and translational stiffeners as claimed. However, Loeppert'482 does teach a construction of miniature silicon condenser microphone (col. 1, lines 7-9).

Since Loeppert'482 does not restrict to the size of the miniature condenser microphone; it therefore would have been obvious to one skilled in the art to provide any thickness and dimensions for the rigid plate-shaped member (12, 16) and the stiffeners (32, 62, 62a, 68) such as providing the rigid plate-shaped member having approximately 2 microns thick and providing the stiffeners having approximately 4 microns thick and 40 microns tall for the desired resonant frequencies.

Regarding claims 9-10, Loeppert'482 does not specifically disclose the first and second resonance frequencies as claimed.

Since Loeppert'482 does not restrict to the applications for the acoustic transducer; it therefore would have been obvious to one skilled in the art to provide the acoustic transducer of

Art Unit: 2614

Loeppert'482 to be used in any applications such as transducers or sensors having the resonance frequencies of approximately 24 kHz or 84 kHz for greater applications.

Regarding claims 19, 27 and 28, Loeppert'482 teaches an acoustic diaphragm having a dynamic response extending through the audible range, and comprising a plate-shaped member (12, 16, figures 1, 1a) cantilevered about one side thereof from a stiff edge (12a, 60). The stiff edge (12a, 60) is pivotally supported by torsional springs (figures 1, 1a, 13; see col. 3, lines 45-48 and col. 5, lines 1-21). The rigid plate shaped member has torsional and translational stiffeners (32, 62, 62a, 68) as claimed (figure 1a, 13, 13a, 13c, 13d, 17a, 17b, col. 5, lines 1-31, col. 7, lines 49-55, col. 8, lines 39-43 and col. 10, lines 15-26) as claimed.

Loeppert'482 does not specifically disclose a dynamic response as claimed. However, Loeppert'482 does not limit the frequency range or restrict to the applications for the acoustic transducer; it therefore would have been obvious to one skilled in the art to provide the acoustic transducer of Loeppert'482 a dynamic response dominated by a single mode of vibration outside of the audible range and to be used in any applications such as transducers or sensors having the resonance frequencies of approximately 24 kHz or 84 kHz for greater applications.

Regarding claim 20, as broadly claimed, Loeppert'482 teaches the torsional and translational stiffeners comprising continuous cross members (32, 62) as claimed.

Regarding claims 23 and 24, Loeppert'482 et al. shows the rigid plate-shaped member (12, 16) that comprises a substantially flat shape or a shape substantially corresponding to a box as claimed (figures 1, 1a, 13).

7. Claims 4 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loeppert et al. (US 5,870,482) in view of Loeppert et al. (US 6,535,460).

Art Unit: 2614

Regarding claims 4 and 22, Loeppert'482 does not specifically teach the rigid plate-shaped member (12, 16) being fabricated of the material as claimed. However, providing the diaphragm, the fixed or back plate and the support structure in a silicon condenser microphone is fabricated of polycrystalline silicon is known in the art.

Loeppert'460 et al. teaches that the diaphragm and the support member are fabricated of polycrystalline silicon (col. 2, lines 53-62 and col. 3, lines 53-62).

Therefore, it would have been obvious to one skilled in the art to provide the rigid plate-shaped member (12, 16) being fabricated of polycrystalline silicon, as taught by Loeppert'460, for an alternate choice.

#### ***Allowable Subject Matter***

8. Claims 11-18 have been allowed.
9. Claims 3 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

10. Applicant's arguments filed 08/28/09 have been fully considered but they are not persuasive.

Responding to the arguments about the Loeppert'482, the Applicant should note that since the rigid plate-shaped member (12) is anchored to a support structure (11) at a fixed edge

Art Unit: 2614

(12a), the rigid plate-shaped member (12) is pivotally mounted to the support structure (11) at the fixed edge or stiff edge (12a), wherein the stiff edge (12a) of the rigid plate-shaped member (12) is supported or suspended by torsional springs (figures 1, 1a, 13, also see col. 3, lines 44-48, col. 5, lines 1-21 and col. 7, lines 19-42).

11. Applicant's arguments with respect to claims 1, 2, 4-10, 19, 20 and 22-28 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUYEN D. LE whose telephone number is (571) 272-7502. The examiner can normally be reached on 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CURTIS KUNTZ can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2614

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUYEN D. LE/  
Primary Examiner, Art Unit 2614

HL  
December 5, 2009